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PERMIT REQUEST FOR SOIL BORINGS AND TEMPORARY MONITORING WELLS FOR SUPPLEMENTAL INVESTIGATION AT CHICORA TANK FARM WITH TRANSMITTAL LETTER CNC CHARLESTON SC
8/28/2013
BRAC PMO SOUTHEAST

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE SOUTHEAST
4130 FABER PLACE DRIVE
SUITE 202
NORTH CHARLESTON, SC 29405

11011
Ser BPMOSE afs/0057
August 28, 2013

Ms. Meredith Amick
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201-1708

Dear Ms. Amick:

SUBJECT: CHICORA TANK FARM WELL APPLICATION REQUEST AT FORMER CHARLESTON NAVAL COMPLEX, CHARLESTON, SC

Enclosed is a copy of the well application request for work at Chicora Tank Farm.

Should you have any questions, please contact Art Sanford by email at art.sanford.ctr@navy.mil or phone at (843) 743-2135.

Sincerely,

R. DAVID CRISWELL, P. E.
Deputy Base Closure Manger

Enclosure: 1. Well Application request

5724 Summer Trees Drive
Memphis, TN 38134
T. 901/372.7962
F. 901/372.2454

August 2, 2013

Ms. Annie Gerry via email: gerryam@dhec.sc.gov
South Carolina Department of Health & Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

RE: Permit Request for Soil Borings and Temporary Monitoring Wells
Supplemental Investigation
Chicora Tank Farm – Charleston Naval Complex, North Charleston, SC

Dear Ms. Gerry:

On behalf of the United States Navy Base Realignment and Closure Project Management Office (BRAC PMO), Resolution Consultants requests permission to advance soil borings and install temporary monitoring wells at the former Chicora Tank Farm Site (the Site) in North Charleston, South Carolina. Activities will be performed in accordance with Resolution Consultants' *Tier II Sampling and Analysis Plan, Supplemental Investigation, Chicora Tank Farm, Charleston Naval Complex, Revision 1,* dated 11 July 2013, and pursuant to South Carolina Well Standards R.61-71. The South Carolina Department of Health and Environmental Control (SCDHEC) approved this sampling and analysis plan in a 19 July 2013, letter from Ms. Meredith Amick. Soil boring and drilling activities will be performed by a South Carolina certified driller.

To evaluate the extent of light non-aqueous phase liquid (LNAPL), direct push technology will be used to advance up to 70 soil borings to an anticipated terminal depth of approximately 15-feet below ground surface. Following soil sample collection, the soil borings will be abandoned in accordance with South Carolina Well Standards R.61-71. Furthermore, up to 16 temporary monitoring wells (10 for LNAPL investigation and 6 for naphthalene investigation) will be installed to an anticipated terminal depth of 15 feet below ground surface. Temporary monitoring wells will be constructed using 2-inch diameter Schedule 40 PVC riser, and either a 10-foot or a 5-foot, 0.010-inch slotted PVC well screen, set to intercept the water table. A 30/40 silica sand filter pack will be placed in the annular space between the well screen and borehole wall, from the bottom of the borehole to approximately 2 feet above the top of the well screen. Bentonite pellets will be placed on top of the filter pack and hydrated (for at least 1 hour) to form a seal approximately 2 to 3 feet thick. Each well will be protected by a watertight expansion cap secured with a padlock, and surrounded by orange safety fencing mounted on steel posts. Wells will be developed within 48 hours of installation. Following a 72-hour post-development equilibration period, an oil-water interface probe will be used to gauge LNAPL and measure water levels at new temporary monitoring wells. Development water and soil cuttings will be handled as investigative derived waste and temporarily staged onsite prior to offsite disposal, as described in the *Tier II Sampling and Analysis Plan* (Resolution Consultants 2013).

RESOLUTION CONSULTANTS

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Following gauging and LNAPL bail down tests (if necessary), temporary monitoring wells will be abandoned in accordance with South Carolina Well Standards R.61-71. Resolution Consultants requests a variance to allow temporary wells to remain in place for a period of 10 days. The extra time is necessary to allow for equilibration, prior to well gauging and bail-down tests. Applicable applications forms are attached, along with figures showing initial locations for soil borings and monitoring wells. Exact locations for subsequent borings and temporary wells will be based on field observations.

Resolution Consultants currently plans to initiate field activities in the fall of 2013 and will notify SCDHEC prior to beginning such activities. If you require additional information or have questions or comments, please contact me at 843-884-0029 or dwarren@ensafe.com.

Sincerely,

Resolution Consultants

By: David Warren
Project Manager
Resolution Consultants

CC: Art Sanford, BRAC PMO
David Criswell, BRAC PMO
Meredith Amick, SCDHEC
Shawn Dolan, Resolution Consultants

Attachments: SCDHEC Well Application Form
Figures
Well Construction Diagram

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SCDHEC Well Application Form

Monitoring Well Application

1. Proposed Location of Monitoring Well(s):

Street Address: **Charleston Naval Complex**
Chicora Tank Farm

City (including Zip): **North Charleston 29405**

County: **Charleston**

Please attach Scaled Map or Plat

2. Well Owner's Information:

Name (Last then First): **Criswell, David**

Company: **Navy BRAC PMO**

Complete Address: **4130 Faber Place Drive**
Suite 202
North Charleston, SC 29405

Telephone Number: **(843) 743-2130**

3. Property Owner's Information:

☐ Check if same as Well Owner

Name (Last then First): **Thompson, Steve**

Company: **City of North Charleston**

Address: **2500 City Hall Lane**
North Charleston, SC 29406

Telephone Number: **(843) 554-5700**

4. Proposed Drilling Date: **09/09/2013**

5. Intended Purpose of Well(s):

Pre-Purchase ☐

Investigation ☑

NOTE: If this request is for an existing DHEC project, please enter the Program area and ID number below.

Program Area: **Federal Superfund**
Project or Site ID #:

6. Proposed number of monitoring wells: **16**

7. Proposed parameters to be analyzed (check all that apply), please specify analytical method beside check box:

VOCs	☐
BTEX	☐
MtBE	☐
Naphthalene	☑
PAHs	☐
Metals	☐
Nitrates	☐
Base, Neutral & Acid Ex.	☐
Pesticides/Herbicides	☐
Phenols	☐
Radionuclides	☐
PCBs	☐
Other (specify below)	☐

8. Proposed construction details (complete and attach proposed monitoring well schematics):

South Carolina Department of Health and Environmental Control (SCDHEC) summary of standards for monitoring well construction (per South Carolina Well Standards and Regulations R. 61-71)

Approval and License Requirements

Prior Department approval is required for the installation or abandonment of all monitoring wells including direct push, geoprobe or other temporary type monitoring wells. The attached monitoring well approval document should be completed, submitted and approved prior to construction of any monitoring well. A monitoring well is any well used to obtain water samples for water quality analyses or to measure groundwater levels. There are no fees for approvals. All monitoring wells must be drilled by a driller that is registered in South Carolina with the Board of Certification of the Environmental Systems Operators. If any of the information on the application including the proposed drilling date, well construction details or well placement changes, the Department (i.e. project manager issuing the well approval) must be notified 24 hours prior to well construction.

Location

Due to the nature and purpose of a monitoring well, the depth and location requirements in respect to surface water bodies, potential contamination sources, etc., are variable, and shall be approved on a case by case basis by the Department.

Construction and Material

Casing should be of sufficient strength to withstand normal forces encountered during and after well installation and be composed of material so as to minimally affect water quality analyses. Casing should have a sufficient diameter to allow for efficient sample collection (i.e., to provide access for sampling equipment). The diameter of the drilled hole needs to be large enough on all sides (1.5 inches of annular space) to allow forced injection of grout through a tremie pipe. All monitoring wells should have a cement pad or aggregate reinforced concrete at the ground surface which extends at least six inches beyond the bore hole diameter and six inches below ground surface to prevent infiltration between the surface casing and the bore hole. All monitoring wells should be grouted from the top of the bentonite seal to the surface with a neat cement, high solids bentonite or neat cement, bentonite mixture approved by the Department. A hydrated bentonite seal with a minimum thickness of 12 inches is to be placed above the filter pack to prevent infiltration of grout if the well has a filter pack. The monitoring well intake or screen design should minimize the amount of formational materials entering the well. The gravel
pack should be utilized opposite the well screen as appropriate so that parameters analyses will be minimally affected. All monitoring wells should have a locking cap or other security device to prevent damage and/or vandalism. Any monitoring well which is destroyed, rendered unusable or is abandoned should be reported to the Department and be properly abandoned, revitalized or replaced as appropriate or required by permit or regulation.

Development

Monitoring wells shall be properly developed. Development shall include the removal of
formation cuttings and drilling fluids from the well bore hole. Development shall be complete when the well produces water typical of the aquifer being monitored.

Reporting Requirements

A monitor well record form (1903) or equivalent to include the following should be completed and submitted to the Department within 30 days after completion of the monitoring wells:

Name and address of facility/owner;
Surveyed or global positioning system location of monitor well(s) on a scaled map or plat;
Driller and certification number;
Date drilled;
Driller's or Geologist's log;
Total depth;
Screened interval;
Diameter and construction details;
Depth to water table with date and time measured;
Surveyed elevation of measuring point with respect to established benchmark;
Monitoring well approval number issued by the Department.

Additionally, the groundwater and soil (if taken) analytical results should be submitted to the Department within 30 days of receipt from the laboratory.

Abandonment

All monitoring wells shall be properly abandoned, when deemed appropriate by the Department. Any well that acts as a source of contamination shall be repaired or permanently abandoned immediately after receipt of notice from the Department. Abandonment shall be by forced injection of grout or pouring through a tremie pipe starting at the bottom of the well and proceeding to the surface in one continuous operation. The well shall be filled with either neat cement, bentonite-cement, or 20% high solids sodium bentonite grout, from the bottom of the well to the land surface.

* This summary of standards for monitoring well construction may not include a listing of all information necessary to obtain an approval to install monitoring wells. Final approval of monitoring well installation will be dependant upon the regulatory requirements for the Department program area for which the monitoring wells are to be installed.

* Some areas of the Department may require a detailed justification of the placement of monitoring wells and the depth of monitoring well screened zones prior to granting installation approval.

Figures

Legend

Property Boundary

0 1,000 2,000 Feet

FIGURE 10-1
SITE LOCATION MAP
CHICORA TANK FARM
CHARLESTON, SOUTH CAROLINA

NAVFAC Naval Facilities Engineering Command

RESOLUTION CONSULTANTS

REQUESTED BY: D. WARREN	DATE: 2/28/2013
DRAWN BY: B. LIPSCOMB	TASK ORDER NUMBER: JM29

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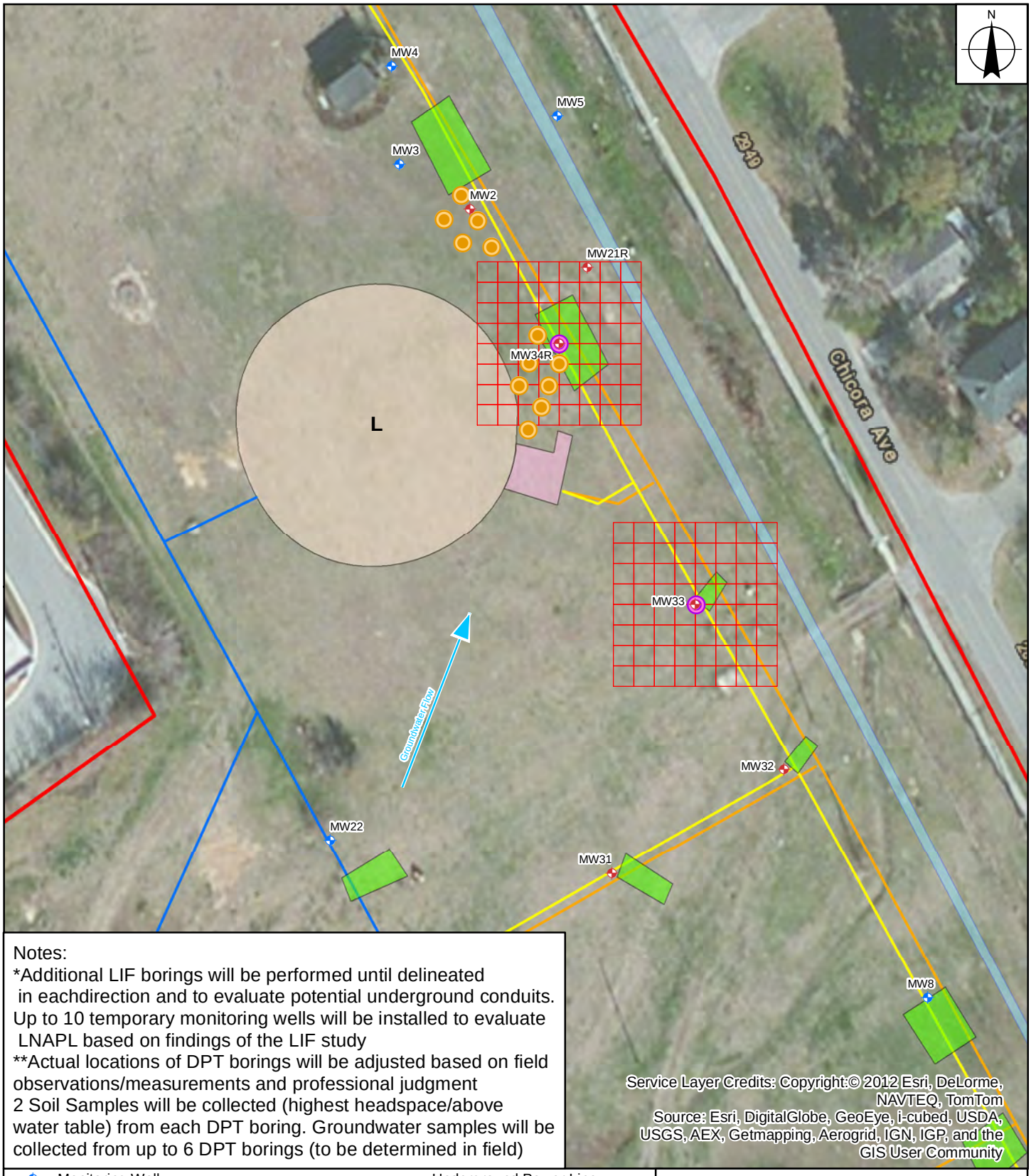

Notes:
*Additional LIF borings will be performed until delineated in eachdirection and to evaluate potential underground conduits. Up to 10 temporary monitoring wells will be installed to evaluate LNAPL based on findings of the LIF study
**Actual locations of DPT borings will be adjusted based on field observations/measurements and professional judgment
2 Soil Samples will be collected (highest headspace/above water table) from each DPT boring. Groundwater samples will be collected from up to 6 DPT borings (to be determined in field)

- Monitoring Well
- Monitoring Well (LTM Well Network)
- Proposed LIF Boring*
- Proposed DPT Boring**
- Estimated Groundwater Flow Direction
- Underground Transfer Line (abandoned in place)
- Proposed LIF Grid
- Excavation/Trench
- Underground Power Line
- Underground French Drain
- Property Boundary
- Pump House (demolished)
- Petroleum Storage Tank (demolished)
- Retention Pond

0 130 Feet

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FIGURE 17-1
PROPOSED SAMPLING LOCATIONS
CHICORA TANK FARM
CHARLESTON, SOUTH CAROLINA

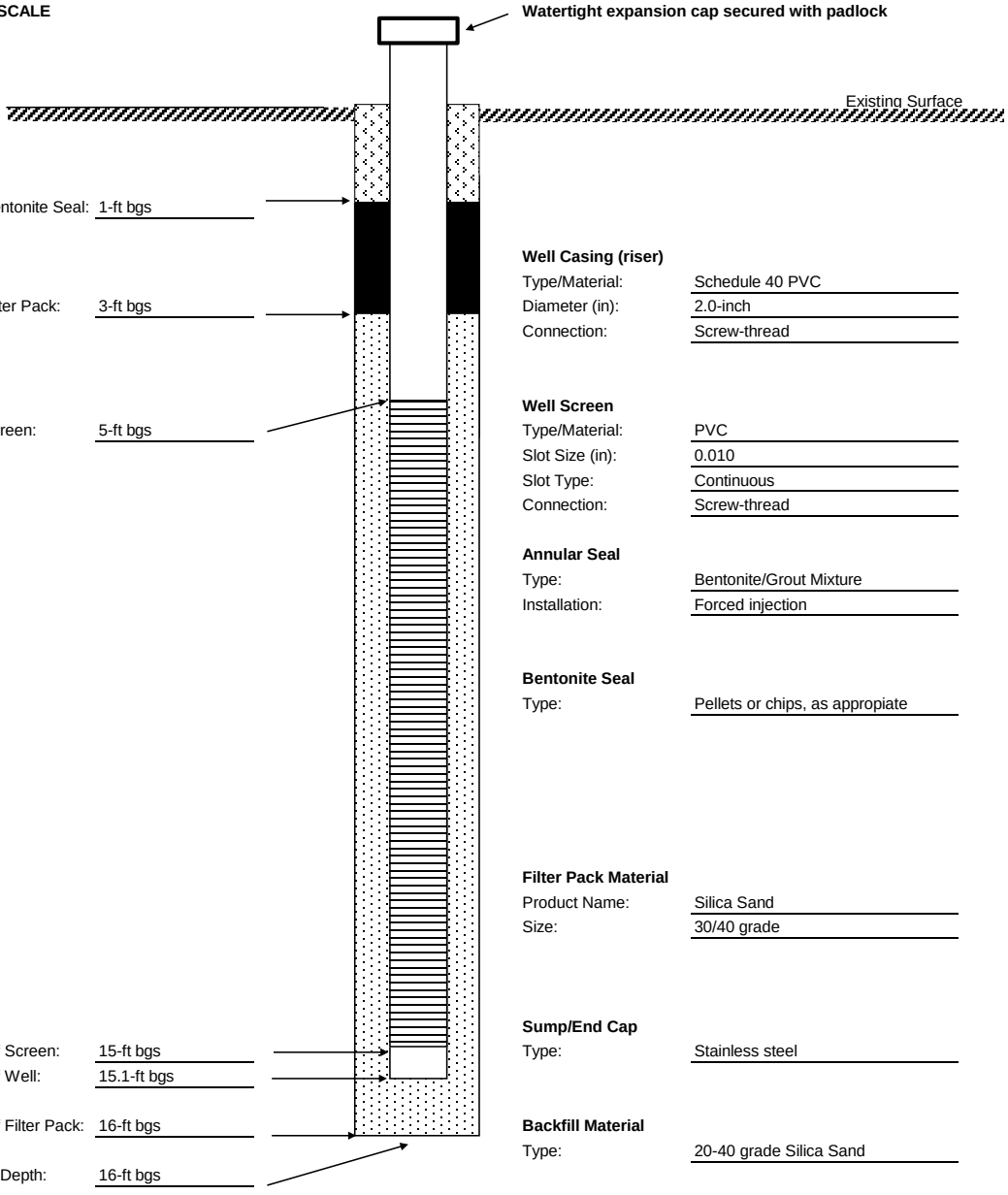
NAVFAC Naval Facilities Engineering Command
RESOLUTION CONSULTANTS

REQUESTED BY: D. WARREN	DATE: 3/26/2013
DRAWN BY: A. ZIMMERMAN	TASK ORDER NUMBER: JM29

Well Construction Diagram

SHALLOW WELL CONSTRUCTION DIAGRAM

NOT TO SCALE



Well Casing (riser)

Type/Material:	Schedule 40 PVC
Diameter (in):	2.0-inch
Connection:	Screw-thread

Well Screen

Type/Material:	PVC
Slot Size (in):	0.010
Slot Type:	Continuous
Connection:	Screw-thread

Annular Seal

Type:	Bentonite/Grout Mixture
Installation:	Forced injection

Bentonite Seal

Type:	Pellets or chips, as appropiate

Filter Pack Material

Product Name:	Silica Sand
Size:	30/40 grade

Sump/End Cap

Type:	Stainless steel

Backfill Material

Type:	20-40 grade Silica Sand